

## DESCRIPTION

**PICTURE RECEIVER HAVING PROGRAM RECOMMENDING  
FUNCTION AND PROGRAM RECOMMENDING METHOD**

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**Technical Field**

The present invention relates to a picture receiver having program recommending function and a program recommending method for accumulating program information of electronic program lists and providing users with 10 recommended programs in accordance with users' antecedent viewing information and liking information.

**Background Art**

Conventionally, as to a picture receiver capable of accumulating program 15 information of electronic program lists, so far realized is a picture receiver which executes a program recommending process according to information such as "programs selected by users" and "programs rather positively selected by users" and provides function of displaying the result and automatic recording of recommended programs. Such a picture receiver is, for example, disclosed in Japanese Patent 20 Laid-Open Application H10-257405.

**Disclosure of the Invention**

A picture receiver, comprising:

25 a program information accumulating means for accumulating program information;

a viewing information obtaining means for obtaining program information of a currently viewing program;

a program recommending means for specifying a recommended program being on the air or to be put on the air within a predetermined time in accordance with program information from the program information accumulating means, program information of the currently viewing program from the viewing information obtaining means, and a predetermined recommendation standard; and

a picture displaying means for displaying two pictures of the recommended program and the currently viewing program in accordance with information from the program recommending means.

A program recommending method, comprising the steps of:

accumulating program information;

obtaining program information of a currently viewing program;

specifying a recommended program being on the air or to be put on the air

within a predetermined time in accordance with accumulated program information, program information of the currently viewing program, and a predetermined recommendation standard; and

displaying two pictures of the recommended program specified and the currently viewing program.

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#### **Brief Description of the Drawings**

Fig. 1 is a block diagram showing the configuration of a picture receiver in the preferred embodiment of the present invention.

Fig. 2 is a flow chart showing the operation of a picture receiver in the preferred embodiment of the present invention.

Fig. 3 is a diagram showing a picture display example of a picture display unit in the preferred embodiment of the present invention.

### **Detailed Description of the Preferred Embodiments**

5        In a picture receiver, when a recommended program is started on another channel while the user is viewing a program, it is necessary to inform the user of it clearly and effectively.

Then, as a method of informing the user of the recommended program when a recommended program is started on another channel while the user is viewing a 10 program, a possible method is such that the user is informed of the start of the recommended program through a message containing the program name, start time, channel name, etc.

However, in the above informing method, there is a problem that it is necessary for the user to select the channel and actually view the recommended 15 program in order to judge whether or not the user really likes the recommended program. Also, there arises a problem of taking much time.

In the present invention, taking into account the above situations, two pictures are automatically displayed when a recommended program is started on another channel while the user is viewing a program. Thus, the object of the invention is to 20 provide a picture receiver and a program recommending method such that the user is able to view the program on one screen, selecting one out of the two programs displayed.

The present invention will be described in the following together with the preferred embodiment.

25        (Preferred embodiment 1)

Fig. 1 is a block diagram showing the configuration of a picture receiver in the preferred embodiment 1 of the present invention. Picture receiver 100 comprises program information accumulating unit 101, viewing information obtaining unit 102, program recommending unit 103, picture control unit 104, picture display unit 105, 5 and remote controller 106.

Not mentioned in Fig. 1, but picture receiver 100 also comprises a plurality of tuners, demodulating circuits, video and audio processing circuits. In case picture receiver 100 is compatible with digital broadcast, it is generally provided with a TS decoder, video decoder, and audio decoder.

10 The tuner fetches the desired high-frequency signal, tuning to the frequency band of the receiving channel, and executes demodulation or error correction of the high-frequency signal. And, it outputs a TS stream (transport stream). The TS stream is supplied to a TS decoder and so on.

15 The TS decoder decodes the TS stream, and separates the TS stream into a video stream, audio stream, and other auxiliary data. The video decoder restores a video signal on the basis of a video stream from the TS decoder. The audio decoder restores a audio signal on the basis of a audio stream from the TS decoder. The video signal restored by the video decoder is supplied to picture control unit 104. Since there are provided a plurality of tuners, a plurality of video signals are 20 supplied to picture control unit 104. On the other hand, a part of the auxiliary data from the TS decoder is supplied to program information accumulating means 101.

Program information accumulating unit 101 is an example of program information accumulating means. As described above, at least a part of the auxiliary data from the TS decoder is supplied to program information accumulating unit 101. 25 Program information accumulating unit 101 accumulates the desired data about

program information out of the auxiliary data supplied. Data about program information includes data such as broadcasters, broadcasting channels, broadcasting time, program titles, outlines, information of casts, and keywords.

Viewing information obtaining unit 102 is an example of viewing information 5 obtaining means. Viewing information obtaining unit 102 accumulates data about program information of programs actually received by picture receiver 100. Data about program information of programs then received are viewing information.

Program recommending unit 103 is an example of program recommending means. Program recommending unit 103 obtains program information from 10 program information accumulating unit 101 and obtains viewing information from viewing information obtaining unit 102. Program recommending unit 103 analyzes viewing information according to a specified algorithm and infers the viewer's liking or the like from the antecedent viewing information and liking information of the user who uses picture receiver 100. And, program recommending unit 103 15 compares the inferred viewer's liking or the like with the program information from program information accumulating unit 101 and specifies a recommended program that matches the viewer's liking or the like.

Picture control unit 104 and picture display unit 105 make up a picture display means. Picture control unit 104 and picture display unit 105 are a structural 20 example of picture display means.

As already described, at least two programs are supplied to picture control unit 104. One of them is a currently viewing program. The other is a recommended program specified by program recommending unit 103. When a program is recommended by program recommending unit 103, a tuner other than the tuner 25 receiving the currently viewing program is controlled so as to receive the

recommended program. And, picture control unit 104 functions to display two pictures of the currently viewing program and the recommended program or to display one picture. Picture display unit 105 is controlled by picture control unit 104, which executes two-picture display and one-picture display.

5        Remote controller 106 is an example of user's input means. The user operates remote controller 106 to input user's input information to the picture displaying means. Specifically, the input information is inputted to picture control unit 104, and picture control unit 104 executes control for shifting the mode to one-picture display of either the recommended program or the currently viewing program in  
10      accordance with the input information.

The user's input means is not limited to remote controller 106. For example, it is possible for the user to operate a control unit disposed in picture receiver 100.

15      In this way, picture receiver 100 automatically displays two pictures by using two tuners when starting a recommended program, thereby informing the user of the start of the recommended program.

Fig. 2 is a flow chart showing the operation of the picture receiver. Fig. 3 is a picture display example of picture display unit 105. The recommended program informing process of the picture receiver will be further described in the following with reference to Fig. 1, Fig. 2, and Fig. 3.

20      As described above, the information of program information accumulating unit 101 and viewing information obtaining unit 102 is first inputted to program recommending unit 103. Program recommending unit 103 evaluates the program information and viewing information input in accordance with a predetermined recommendation standard (user's antecedent viewing information and liking information) and judges whether or not the recommended program is on the air or  
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the recommended program is started within the specified time.

When the recommended program is on the air or started within the specified time (S201), whether the channel of the recommended program is being viewed or not is judged (S202). When the channel of the recommended program is being viewed (No in S202), the recommended program informing process is then finished, and the screen is shifted to recommended program viewing mode.

On the other hand, when a channel other than the recommended program is viewed (Yes in S202), picture control unit 104 starts two-picture processing (S203). That is, as shown in Fig. 3, the screen is shifted to two-picture display mode (S204) in which the channel of the currently viewing program is displayed on the left screen (main screen) 301 while the channel of the recommended program is displayed on the right screen (sub-screen) 302. At the same time, message 303 for showing the start of the recommended program and remote controller operation guide 304 for selecting either the currently viewing program or the recommended program by using remote controller 106 are displayed (S205).

When the user selects the recommended program by using remote controller 106, or pushes the “decision” key (Yes in S206), then picture control unit 104 functions to shift the screen from two-picture mode to one-picture mode, and also, to change over the channel to the channel of the recommended program (S207), thereby shifting the screen to recommended program viewing mode.

In case the user selects the currently viewing program by using remote controller 106, or pushes the “return” key (No in S206, Yes in S208), picture control unit 104 functions to shift the screen from two-picture mode to one-picture mode, and also, to return the channel to the channel of the currently viewing program (S209), thereby continuing the mode of viewing on the channel currently viewed.

In this case, with two pictures displayed, if no operation is given by the user for a predetermined time (No in S206, No in S208, Yes in S210), then picture control unit 104 automatically shifts the screen from two-picture mode to one-picture mode, and also, returns the channel to the channel of the currently viewing 5 program (S209), thereby continuing the mode of viewing on the channel currently viewed.

In the above description, the two-picture display structurally includes left-hand screen (main screen) 301 and right-hand screen (sub-screen) 302. However, the present invention is not limited to two-picture display on the right and left screens or 10 on main screen and sub-screen. It is also preferable to adopt upper and lower two-picture display, two-picture superposing display, or superimposing display.

As is obvious in the above description, according to the picture receiver and a program recommending method of the present invention, when a recommended program is started on another channel while the user is viewing a program, it is 15 possible to inform the user of it clearly and effectively.

### **Industrial Applicability**

In the picture receiver having program recommending function and the program recommending method of the present invention, when a recommended 20 program is started on another channel while the user is viewing a program, it is possible to inform the user of it clearly and effectively. The picture receiver having program recommending function and the program recommending method of the present invention are useful for a picture receiver which accumulates program information and provides the user with recommended programs in accordance with 25 the user's antecedent viewing information and liking information.

**Claims**

1. A picture receiver, comprising:

a program information accumulating means for accumulating program

5 information;

a viewing information obtaining means for obtaining program information of a currently viewing program;

a program recommending means for specifying a recommended program being on the air or to be put on the air within a predetermined time in accordance with 10 program information from the program information accumulating means, program information of the currently viewing program from the viewing information obtaining means, and a predetermined recommendation standard; and

a picture displaying means for displaying two pictures of the recommended program and the currently viewing program in accordance with information from 15 the program recommending means.

2. The picture receiver of claim 1,

wherein the program recommending means judges whether or not the recommended program matches the currently viewing program, and

20 the picture displaying means executes two-picture display only when the program recommending means judges that the recommended program does not match the currently viewing program.

3. The picture receiver of claim 1 or claim 2, further comprising:

25 a user's input means for accepting user's input,

wherein the picture displaying means shifts the mode to one-picture display of either the recommended program or the currently viewing program in accordance with input information from the user's input means.

5        4. A program recommending method, comprising the steps of:  
          accumulating program information;  
          obtaining program information of a currently viewing program;  
          specifying a recommended program being on the air or to be put on the air  
          within a predetermined time in accordance with the accumulated program  
10      information, program information of the currently viewing program, and a  
          predetermined recommendation standard; and  
          displaying two pictures of the recommended program specified and the  
          currently viewing program.

15        5. The program recommending method of claim 4,  
          wherein the step of displaying two pictures displays two pictures of the  
          recommended program and the currently viewing program when the recommended  
          program does not match the currently viewing program.

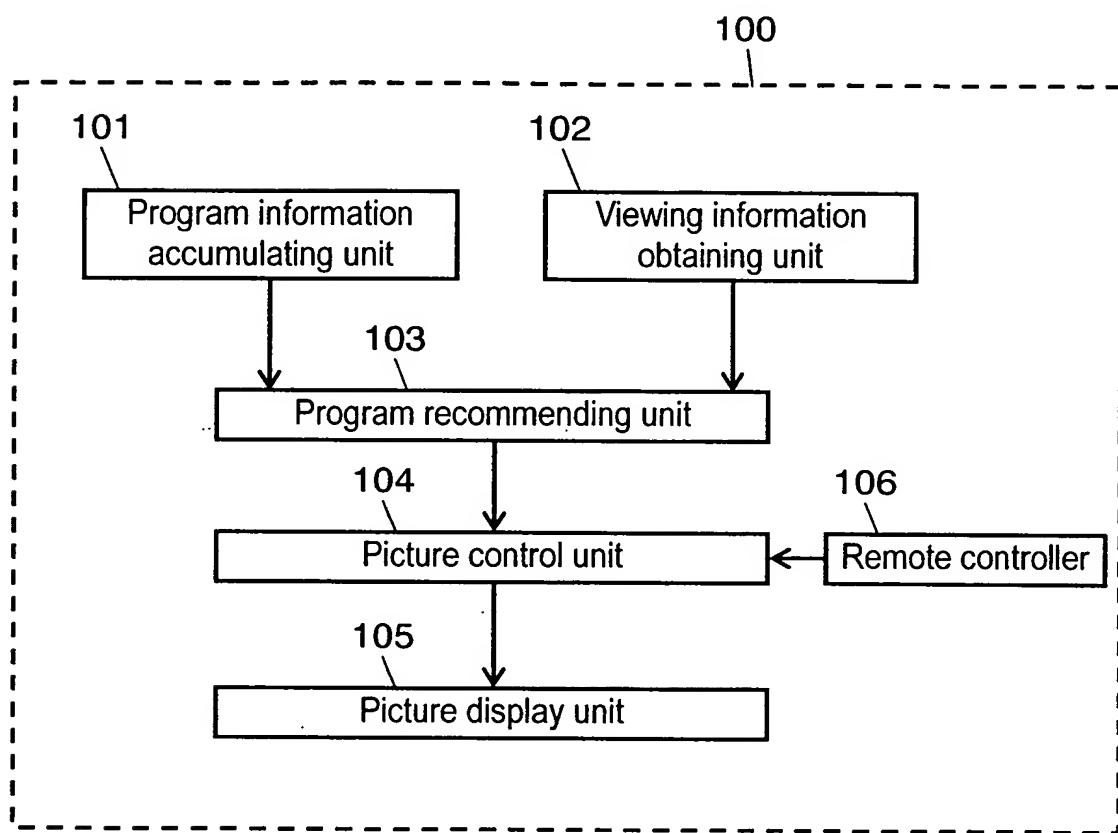
20        6. The program recommending method of claim 4 or claim 5, further  
          comprising:  
          a step of shifting the mode from two-picture display to one-picture display of  
          either the recommended program or the currently viewing program in accordance  
          with user's input.

**Abstract**

The present invention provides a picture receiver having program recommending function and a program recommending method which may automatically display two pictures when a recommended program is started while 5 the user is viewing a program, thereby informing the user of it clearly and effectively. The picture receiver comprises a program information accumulating means for accumulating program information, a viewing information obtaining means for obtaining program information of currently viewing program, a program recommending means for specifying a recommended program being on the air or to 10 be put on the air within a predetermined time, and a picture displaying means for displaying two pictures on the channel of the recommended program and on the channel of the currently viewing program in accordance with information from the program recommending means. The program recommending method comprises a 15 step of accumulating program information, a step of obtaining program information of currently viewing program, a step of specifying a recommended program being on the air or to be put on the air within a predetermined time, and a step of displaying two pictures of the recommended program specified and the currently viewing program.

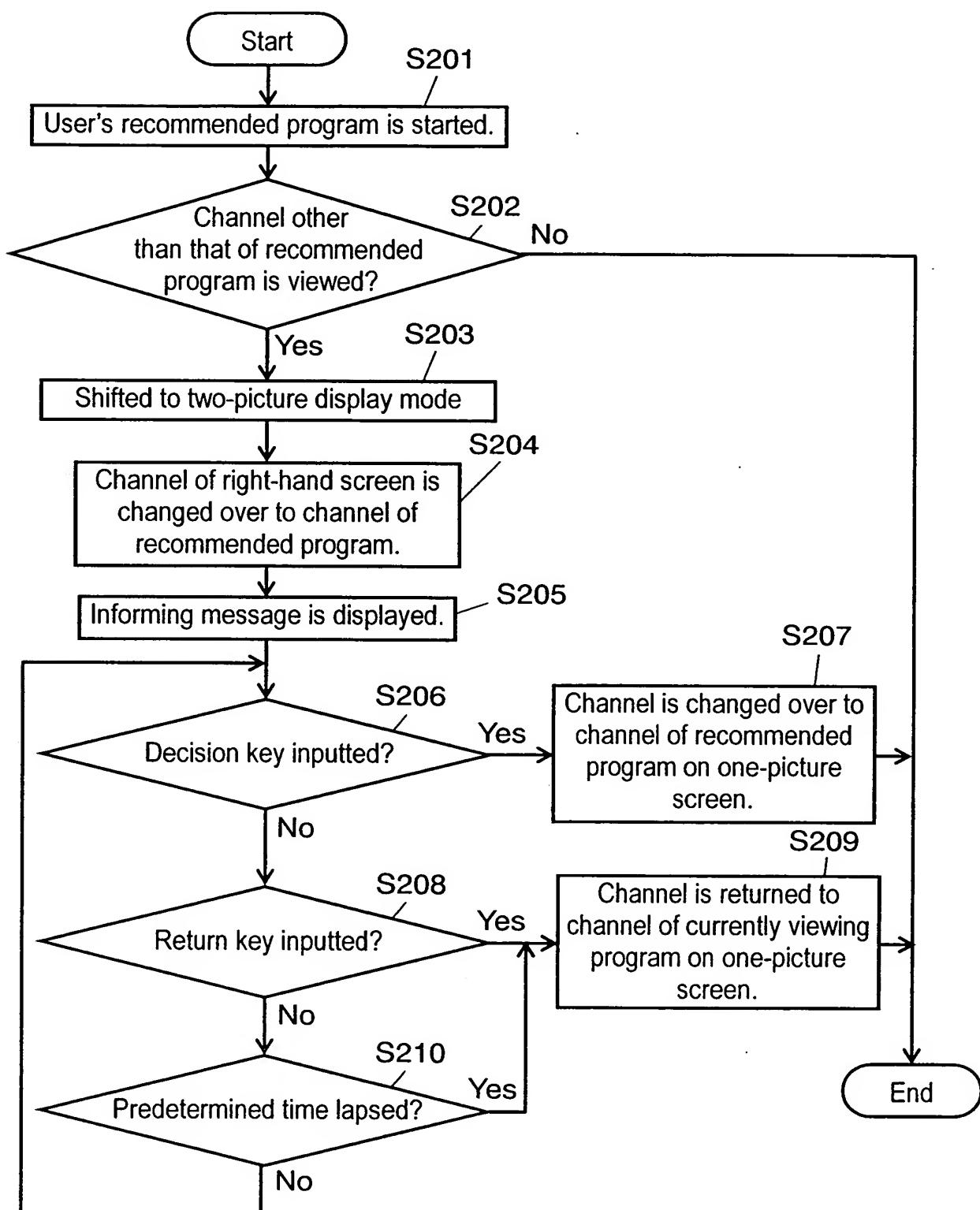
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FIG. 1



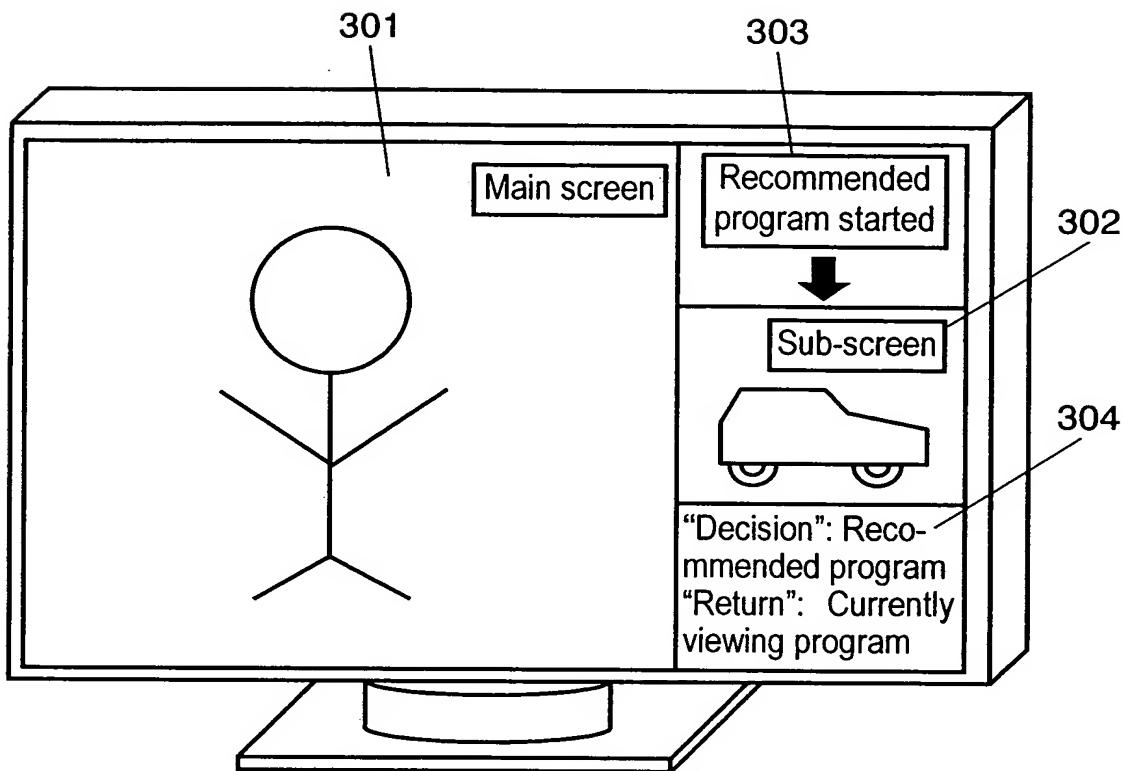
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FIG. 2



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FIG. 3



Reference numerals in the drawings

- 100 Picture receiver
- 101 Program information accumulating unit
- 102 Viewing information obtaining unit
- 103 Program recommending unit
- 104 Picture control unit
- 105 Picture display unit
- 106 Remote controller
- 301 Main screen
- 302 Sub-screen
- 303 Recommended program informing message
- 304 Remote controller operation guide

## INTERNATIONAL SEARCH REPORT

Int:  National Application No  
 PCT/JP2004/019659

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H04N5/445 H04N5/45

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/208758 A1 (SCHEIN STEVEN M ET AL) 6 November 2003 (2003-11-06) paragraphs '0071!, '0080!, '0084!; claims 1-5 figure 13c -----	1, 3, 4, 6
X	WO 99/04561 A (GUIDE E INC 'US!; ALEXANDER RON 'US!; DIAS STEVE 'US!; HANCOCK KEN 'US) 28 January 1999 (1999-01-28) abstract page 13, lines 20-30 page 17, lines 16-22 page 36, line 21 - page 39, line 12 page 43, lines 27-36 -----	1, 3, 4, 6

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP2004/019659

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 2003208758	A1 06-11-2003	US 2002059599 A1		16-05-2002
		US 6388714 B1		14-05-2002
		AU 7387196 A		28-04-1997
		BR 9611064 A		13-07-1999
		CA 2232003 A1		10-04-1997
		EP 0880856 A1		02-12-1998
		JP 10512420 T		24-11-1998
		JP 3553607 B2		11-08-2004
		US 2002138840 A1		26-09-2002
		US 2004210935 A1		21-10-2004
		CA 2374730 A1		10-04-1997
		CN 1200221 A		25-11-1998
		JP 2004194344 A		08-07-2004
		JP 2004215301 A		29-07-2004
		JP 2004282775 A		07-10-2004
		WO 9713368 A1		10-04-1997
		US 2003196201 A1		16-10-2003
		US 6263501 B1		17-07-2001
		US 2004111745 A1		10-06-2004
		US 6002394 A		14-12-1999
		US 6732369 B1		04-05-2004
		US 6323911 B1		27-11-2001
		US 6075575 A		13-06-2000
		US 2002019981 A1		14-02-2002
		US 2003005445 A1		02-01-2003
-----	-----	-----	-----	-----
WO 9904561	A 28-01-1999	AT 235780 T		15-04-2003
		AU 733993 B2		31-05-2001
		AU 8504898 A		10-02-1999
		BR 9812104 A		18-07-2000
		CA 2297039 A1		28-01-1999
		CN 1290452 T		04-04-2001
		DE 69812701 D1		30-04-2003
		DE 69812701 T2		05-02-2004
		DK 1036466 T3		14-07-2003
		EP 1372339 A2		17-12-2003
		EP 1339229 A2		27-08-2003
		EP 1036466 A1		20-09-2000
		ES 2199449 T3		16-02-2004
		JP 2001513595 T		04-09-2001
		JP 2004007850 A		08-01-2004
		JP 2004048805 A		12-02-2004
		US 6122011 A		19-09-2000
		US 2002073424 A1		13-06-2002
		WO 9904561 A1		28-01-1999
		US 6177931 B1		23-01-2001
		US 2003208756 A1		06-11-2003
		US 6756997 B1		29-06-2004
		US 2005010949 A1		13-01-2005
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